

I claim:

1. A physical to electrical converter, comprising:
a handle supporting
a platform movable with human hand inputs, said platform
5 movable on two intersecting axes,
two sensors per each axis of said axes for detecting
movement of said platform and outputting signals related to
movement of said platform,
tactile feedback means for providing a tactile feedback to
10 a human user of said converter,
said tactile feedback means comprising of an electric
motor with shaft and an offset weight for causing vibration
as said tactile feedback, the motor with shaft and offset
weight within a cavity in said handle;
15 said sensors each include an electrically active activator
spatially separated from an electric contact surface.
2. A physical to electrical converter according to claim
1 wherein said sensors are capable of sensing variable hand
input forces and outputting the signals representing the
20 variation of the input forces.
3. A hand input controller for controlling objects shown
on a display, comprising:
a hand-operable input member movable on two axes for
activating at least one sensor, said sensor electrically
25 connected to circuitry, said circuitry at least for
outputting control signals for manipulating objects shown on
a display; and
tactile feedback means for providing a human user a
detectable vibration, said tactile feedback means comprising
30 of an electric motor with shaft and an offset weight, the
motor with shaft and offset weight within a cavity in said
controller.

4. A hand input controller according to claim 3 wherein said hand-operable input member includes a platform; said platform positioned for activating said sensor and at least three additional sensors, the sensors electrically connected to said circuitry.

5. A hand input controller according to claim 4 wherein the sensors each have an electrically active activator spatially separated from an electric contact surface.

6. A hand input controller according to claim 5 wherein said cavity is within a handle.

7. A hand input controller according to claim 6 wherein the sensors are capable of sensing variable hand input forces and causing output of signals representing the variation of the input forces.

8. A physical to electrical converter for manipulating objects shown on a display, comprising:

a hand-operated input controller supporting
a hand-operable platform member movable on two axes for activating at least one sensor, said input controller also supporting

tactile feedback means for providing a user a tactile feedback.

9. A physical to electrical converter according to claim 8 wherein said platform is positioned for activating four sensors, said four sensors arranged two sensors per each axis of the axes, the axes are generally mutually perpendicular.

10. A physical to electrical converter according to claim 9 wherein said tactile feedback means is comprised of an electric motor with an offset weight on its shaft for

causing vibration.

11. A physical to electrical converter according to claim 10 wherein said sensors each have an electrically active activator spatially separated from an electric contact surface.

12. A physical to electrical converter according to claim 11 wherein resilient means is applied in said sensors for maintaining the spatial separation.

13. A physical to electrical converter according to claim 12 wherein said sensors are capable of sensing variable hand input forces and causing output of signals representing the variation of the input forces.

14. A physical to electrical converter according to claim 13 wherein said resilient means includes dome shaped members associated one dome shaped member per each of the four sensors.

15. A physical to electrical converter according to claim 14 wherein the electrically active activators are carried by said dome shaped members; the electrically active activators are formed of deformable electrically conductive material and convexed in shape, whereby when said platform is moved and at least one of the sensors is activated, with increasing hand input forces the convexed shaped material deforms to contact additional surface area of said electric contact surface to provide additional conductivity changes.

16. A physical to electrical converter according to claim 15 wherein the four dome shaped members are integrally formed as elements of a single sheet.

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17. A physical to electrical converter according to claim 16 wherein the electrically active activators are carried by said dome shaped members; the electrically active activators are formed of deformable electrically conductive material and convexed in shape, whereby when said platform is moved and at least one of the sensors is activated, with increasing hand input forces the convexed shaped material deforms to contact additional surface area of said electric contact surface to provide additional conductivity changes.

18. A hand input physical to electrical converter for use in controlling imagery, comprising:

a base supporting

a moveable platform, said platform moveable with hand inputs to said converter, said platform moveable on two axes relative to said base,

sensor means for producing a signal representing movement of said platform, said signal for at least in part controlling imagery,

tactile feedback means for providing vibration detectable through a hand inputting to said converter.

19. A hand input physical to electrical converter in accordance with claim 18 wherein said sensor means comprises four sensors, said four sensors arranged two sensors per each axis of the axes, the axes are generally mutually perpendicular.

20. A hand input physical to electrical converter in accordance with claim 19 wherein said platform is positioned for activating said four sensors.

21. A hand input physical to electrical converter in accordance with claim 20 wherein said sensors each have an electrically active activator spatially separated from an electric contact surface.

22. A hand input physical to electrical converter in accordance with claim 21 wherein said tactile feedback means comprises an electric motor with an offset weight on its shaft; the motor and offset weight on the shaft positioned within a cavity in said converter.

23. A hand input physical to electrical converter in accordance with claim 22 wherein said platform includes pivot structuring.

24. A hand input physical to electrical converter in accordance with claim 22 wherein said sensors are capable of sensing variable input forces and causing output of signals representing the variation of the input forces.

25. A hand input physical to electrical converter in accordance with claim 24 wherein said platform member includes pivot structuring.

26. A hand input physical to electrical converter according to claim 24 wherein resilient means is applied in said sensors for maintaining the spatial separation.

27. A hand input physical to electrical converter according to claim 26 wherein said resilient means includes dome shaped members associated one dome shaped member per each of the four sensors.

28. A physical to electrical converter according to claim 27 wherein the electrically active activators are carried by said dome shaped members; the electrically active activators are formed of deformable electrically conductive material and convexed in shape having an apex, said apex positioned over said electric contact surface, whereby when at least one of the sensors is activated, with increasing hand input

forces the convexed shaped material deforms to contact additional surface area of said electric contact surface to provide additional conductivity changes.

5 29. A physical to electrical converter according to claim 28 wherein the four dome shaped members are integrally formed as elements of a single sheet.

10 30. A physical to electrical converter according to claim 29 wherein the electrically active activators are carried by said dome shaped members; the electrically active activators are formed of deformable electrically conductive material and convexed in shape having an apex, said apex positioned over said electric contact surface, whereby when at least one of the sensors is activated, with increasing hand input forces the convexed shaped material deforms to contact additional surface area of said electric contact surface to provide additional conductivity changes.

15 31. A physical to electrical converter comprising:
a generally planar surface rotatable relative to a housing about at least two intersecting axes, said axes lying generally parallel to said planar surface, and
20 a plurality of sensors for sensing a present position of said planar surface relative to said axes and defining an output signal; and
tactile feedback means for providing a user of said
25 converter a tactile feedback.

32. A physical to electrical converter according to claim 31 wherein said tactile feedback means comprises of an electric motor with an offset weight for causing vibration.

30 33. A physical to electrical converter according to claim 32 wherein said sensors each have an electrically active activator spatially separated from an electric contact surface.

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34. A physical to electrical converter according to claim 33 wherein a value of said output signal is based on a combination of (i) the present position of said planar surface relative to said axes, and (ii) an amount of pressure applied to said planar surface.

35. A physical to electrical converter according to claim 34 wherein said planar surface is contacted directly by a human user.

36. A physical to electrical converter according to claim 35 wherein said sensor further include resilient dome caps as return members.

37. A physical to electrical converter according to claim 36 wherein said housing is a single housing structured to be held in two hands of a human user simultaneously, and said planar surface is a four-way rocker platform positioned to be operated by a thumb of a human hand holding the housing.

38. A physical to electrical converter according to claim 37 wherein the electrically active activators are carried by said dome shaped members; the electrically active activators are formed of deformable electrically conductive material and convexed in shape having an apex, said apex positioned over said electric contact surface, whereby when at least one of the sensors is activated, with increasing amount of pressure applied the convexed shaped material deforms contacting additional surface area of said electric contact surface to provide additional conductivity changes.

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